



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/564,789

01/13/2006

Tomoyuki Horiguchi

TIP-05-1845

3315

35811 7590 03/19/2008

IP GROUP OF DLA PIPER US LLP  
ONE LIBERTY PLACE  
1650 MARKET ST, SUITE 4900  
PHILADELPHIA, PA 19103

EXAMINER

HUTCHINSON, SHAWN R

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

03/19/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/564,789	<b>Applicant(s)</b> HORIGUCHI ET AL.	
	<b>Examiner</b> SHAWN R. HUTCHINSON	<b>Art Unit</b> 1794	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 29-40 and 42-48 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 29-40 & 42-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

### **DETAILED ACTION**

1. Applicant's amendments and remarks filed 01/03/08 are acknowledged. Claims 1-28 and 41 are cancelled; Claims 29-40 & 42-48 are pending.

### ***Response to Amendment***

2. The changes Applicant made in the claims from "leather-like" to "artificial leather" is helpful. Applicant is encouraged to make a similar change in the new Title.

The following title is suggested: "Nonwoven Fabric Containing Ultra-Fine Fibers, Artificial Leather Sheet, and Product Methods Thereof".

3. Applicant's amendments incorporating the limitation of "at least substantially... entangled with each other" is sufficient to overcome the rejection over 35 USC 102. However, it is insufficient to overcome a 35 USC 103 rejection as set forth below.

4. Cancellation of Claim 41 and amendment of Claims 40 & 42 are insufficient to overcome the obviousness-type double patenting rejection. Yokoi teaches a fiber-entangled substrate containing ultra-fine fibers. Applicant's amended claim regards a substantially entangled nonwoven fabric and artificial leather that is substantially made of a fiber material. Although Yokoi is apparently silent regarding the amount of entanglement, it would have been obvious to one of ordinary skill to vary the amount of entangling as result-effective variable and is unpatentable; see *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Further unpatentable, Applicant's "substantially entangled" implicit range is obvious over Yokoi's implicit range of "entangled" fibers because it overlaps or lies within the range.

5. Regarding Claim 39-48, Applicant's amendments are to a leather sheet comprising a fabric substantially made from fibers. Mimura teaches such a *fabric* as the split nonwoven ({Mimura} Claims 1-3). Only once it is impregnated with a polyurethane does it become his invention of an artificial leather *sheet* ({Mimura} Claims 4-7).

6. Regarding the provisional rejection for obviousness-type double patenting, Applicant's amendments are drawn to an artificial leather sheet comprising a nonwoven fabric that is substantially made of a fiber material. Similarly Yokoi teaches an artificial leather sheet comprising a nonwoven fabric that is substantially made of a fiber material. When the fabric is impregnated with polyurethane it is then considered an artificial leather sheet. Thus, Applicant's Amendments fail to obviate the rejection.

### ***Response to Arguments***

7. The Examiner notes Applicant's assertion that the instant invention is directed to artificial leather comprising substantially of fibrous material rather than elastomer and thus Mimura teaches away from the present invention. While Mimura teaches elastic material in the artificial leather ({Mimura} Claim 4), split-fiber nonwoven artificial leather does not require elastic material because in some instances it leads to unsatisfactory results ({Mimura} C2:L26-47).

8. Applicant asserts that a nonwoven fabric which has the physical properties defined in Claim 29 is not obtained by Mimura because the polyurethane in the Mimura fabric will contribute to the tenacity of the fabric. Contribution of the polyurethane to the tenacity of the artificial leather depends on the polymer properties chosen, as Applicant

confirms ({Applicant} Remarks: Page 33). Mimura teaches overlapping properties of the nonwoven fabric including similar thickness, fiber deniers, degree of splitting fibers, fabric weight, apparent density, materials, hydroentanglement orifice size, and process, and thus the nonwoven described by Mimura would be expected to have similar physical properties.

9. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the images upon which applicant relies appear not to encompass the degree of splitting achieved by Mimura. While Fig. 1 shows Applicant's splitting, Fig. 2 shows ultra-fine fibers that Applicant states are "not so entangled" ({Amendment} Page 32). Applicant attempts to establish that the amount of splitting taught by Mimura and the instant invention are dissimilar. However, without details regarding how the fibers split, under what conditions, and a quantified measure of the degree of splitting, the Examiner is unable to confirm that the fibers in Fig. 2 represent the technique of forming the fabric taught by Mimura.

10. With respect to the argument that Mimura does not teach hydro-entanglement after conversion of bundles into ultra-fine fibers, Examiner respectfully disagrees. "It is most effective to carry out an entangling treatment after needle-punching ({Mimura} C6:L0-55)." Thus the entangling occurs at least simultaneously with the splitting.

A "95%" split fiber, which Mimura teaches ({Mimura} Example 1), appears to be substantially split. Applicant has not sufficiently defined a substantially split fiber, and why Mimura's "95%"-split fibers are not substantially split.

### ***Double Patenting***

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome a provisional rejection based on a nonstatutory double patenting ground provided the conflicting application either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

12. Claims 40 & 42-48 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/522519 (US 20060035556 A1) to Yokoi, et al. {Yokoi}. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending application claims dyed artificial leather comprising entangled ultra-fine polyester fibers containing particulate pigments ({Yokoi} [0036-0039]). The articles are substantially similar given the disclosure ({Yokoi} [0034-0040]). While the fabric properties – weight, apparent density, tear strength, and tensile strength – are absent from the copending application these result-effective variables that yield predictable outcome, which is unpatentable.

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. Claims 29-36 and 38-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mimura, et al. {Mimura} (US 6566287 B1).

Regarding Claims 29-32, Mimura teaches and discloses by example forming nonwoven fabrics from short fiber splittable bicomponent fibers ({Mimura} C1:L8-13), that are entangled ({Mimura} C3:L1-10), whereby the fibers comprise islands of polyamide ({Mimura} C18:L25-30) or polyester ({Mimura} C20:L6-10) and a dissolvable sea of polyethylene. The unsplit-fiber density was approximately 5.3-denier, 5.8-dtex and the ultra-fine fiber density was 0.14-denier, or 0.16-dtex ({Mimura} C20:L33-35). The nonwoven fabric weights were 400- and 500-g·m<sup>-2</sup> with apparent densities of 0.33- and 0.34-g·cm<sup>-3</sup>, respectively ({Mimura} C18:L35-40 | C20:L20-25). Tensile strength of

one ultra-fine fiber sheet formed with impregnation polyurethane of dissolved polyurethane was  $11.9\text{-kg}\cdot\text{cm}^{-1}$  or  $116.7\text{-N}$ .

Regarding Claims 29-36 & 38-46, Mimura explicitly states that polyurethane in split-fiber nonwoven artificial leathers of prior art is not necessarily used, as it in some instances leads to unsatisfactory results ({Mimura} C2:L26-47). Contrary to Applicant's assertion ({Applicant} Page 31), Mimura does not require an elastomer for the fabric to be considered an artificial leather.

The Examiner understands that the "short fiber" nomenclature is synonymous with staple. Mimura is silent regarding the 10% modulus and tear strength of the fabric. However, because the fabric comprises identical polymer whose fibers are within the range specified by the Applicant's claims, the Examiner considers the examples taught by Mimura and by Applicant to be substantially similar. The properties Applicant claims are intrinsic to the fabric, based on the similar thickness, fiber deniers, degree of splitting fibers, fabric weight, apparent density, tensile strength, materials, hydroentanglement orifice size, and process. Depending on the choice of whether to impregnate with polyurethane and what then type, polyurethane might not substantially affect the tensile strength of the artificial leather.

Regarding Claims 33-36 and 38, Mimura teaches a method of producing the nonwoven fabric by first needle-punching cross-lapped carded fabrics and then hydroentangling the web ({Mimura} C6:L44-63). The water pressure of the jets is up to  $200\text{-kg}\cdot\text{cm}^{-3}$  or  $19.5\text{-MPa}$  ({Mimura} C6:L55-58). The apparent density of the nonwoven is  $0.18\text{- to }0.4\text{-g}\cdot\text{cm}^{-3}$  ({Mimura} C3:L60), with an example reported to be  $0.232\text{-g}\cdot\text{cm}^{-3}$ ,



(Mimura C16:L48-50). The orifices of the hydroentanglement manifold have a diameter of 0.05- to 0.5-mm, (Mimura C6:L58-60). Regarding treatment, when the fabric is in contact with the jets, it may be dried (Mimura C6:L60-63), or further split (Mimura C9:L39-41 & C9:L59-61).

Mimura is silent about the apparent density of the needle-punched fabric and the thickness change after hydroentangling. However, it appears that the apparent density is necessarily within the range claimed, given the value cited above for the fabric. The fabric compacts when entangled through needle-punching or hydroentangling. The change in thickness during entanglement is possible with the teaching by Mimura since the jet manifold is substantially identical and operates at twice the pressure claimed. The Examiner considers the examples taught to by Mimura and the Applicant to be substantially similar and the properties claimed of the fabric clearly obtainable based on the teachings by Mimura.

Regarding Claims 39-46, Mimura teaches and discloses examples leather-like sheets comprising ultra-fine nonwoven fabrics. The unsplit fiber density was approximately 5.3-denier, 5.8-dtex and the ultra-fine fiber density was 0.14-denier, or 0.16-dtex (Mimura C20:L33-35). The sheet has a fabric weight of  $483\text{-g}\cdot\text{m}^{-2}$ , apparent density of  $0.4\text{-g}\cdot\text{cm}^{-3}$ , and tensile strength of  $11.9\text{-kg}\cdot\text{cm}^{-1}$ , or 129.5-N, which satisfies the relationship between tensile strength and fabric weight in instant Claim 40 (Mimura C20:L55-56). Mimura teaches the techniques for altering (raising) a surface to mimic a grain layer and include these effects in examples (Mimura C12:L6-23 & C15:L46-61).

The “short fiber” nomenclature appears synonymous with staple. The polyurethane film does not appear to necessarily contribute to the tenacity or tear strength. Fibers from polyester and polyamide are known to have much lower elongation than polyurethane and higher modulus. Mimura is silent regarding the tear strength of the sheet and abrasion loss. However, because the fabric comprises identical polymer whose fibers are within the range specified by the Applicant’s claims and the leather-like sheets share impregnation of an elastomeric polymer ({Applicant} C10:L12-25) and [0091], the Examiner considers the examples taught to by Mimura and the Applicant to be substantially similar and the properties claimed by the Applicant are obvious over the fabric by Mimura.

Mimura teaches similar thickness, fiber deniers, degree of splitting fibers, fabric weight, apparent density, tensile strength, materials, hydroentanglement orifice size, and process. These aspects appear to indicate that the prior and instant inventions have substantially similar properties. These specifications together with Mimura’s teaching for optional impregnation of polyurethane, tensile and tear strength are at least result-effective variables.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to follow the teaching for a split ultra-fine fiber nonwoven web that can be used for artificial leather {Mimura}, and select known polymeric materials to optimize the properties of the fabric or artificial leather. Mimura teaches substantially similar specifications for the nonwoven fabric that demonstrate result-effective variables. As discussed above, choosing whether to include polyurethane is optional, and the degree

Art Unit: 1794

to which it affects the mechanical properties of the fabric and artificial leather depends on the choice of polyurethane. Selecting known materials for conventional uses is unpatentable. Claiming specific properties within previously disclosed overlapping ranges is a *prima facie* case of obviousness. Optimizing these ranges is also unpatentable. It would have been obvious to follow teachings set forth by Mimura and obtain the nonwoven fabric and artificial leather from split ultra-fine fibers.

16. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over {Mimura} (US 6566287 B1) in view of Honda, et al. {Honda} (US 5256429 A).

Mimura teaches an ultra-fine nonwoven fabric for use as artificial leather comprising splittable bicomponent nylon and polyester fibers that is needle-punched and later hydroentangled. Mimura lacks teaching that the fabric, after needle-punching and before hydroentangling can be split perpendicularly to the thickness direction.

Honda teaches a nonwoven fabric for use as artificial leather where a needle-punched sheet is split by peeling them apart. Honda teaches details about this process especially to obtain undamaged sheets, in that the more strongly punched, the harder the fabric is to split ({Honda} C5:L20-34).

At the time of the invention, it would have been obvious to one of ordinary skill to use the teaching to split a needle-punched fabric {Honda} when producing the splittable bicomponent short-fiber fabrics that are needle-punched and later hydroentangled before being made into artificial leather {Mimura}. The motivation would be to obtain undamaged sheets, in that the more strongly punched, the harder the fabric is to split

Art Unit: 1794

({Honda} C5:L20-34). Therefore, it would have been obvious to combine Mimura and Honda and obtain fabric and artificial leather with fibers split perpendicularly.

17. Claims 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over {Mimura} (US 6566287 B1) in view of Katayama, et al. {Katayama} (US 6537660 B2).

Mimura teaches an ultra-fine nonwoven for artificial leather comprising splittable nylon and polyester fibers that is needle-punched and hydroentangled. Mimura lacks teaching that the ultra-fine fibers can optionally contain particles of micron size.

Katayama teaches ultra-fine splittable nonwoven fabrics for leather- or suede-like sheets comprising fibers of polyester or polyamide and entangled through needle-punching or water-jets. The fibers contain particles between 0.01- and 5- $\mu$ m for use as stabilizers, colorants, absorbers, antioxidants, antistatic agents, flame retardants, plasticizers, lubricants, and crystallization governors ({Katayama} C6:L44-60). These applications correspond with the uses taught by Applicant [0034].

At the time of the invention, it would have been obvious to one of ordinary skill in the art to include particles in nonwoven fabrics of ultra-fine fibers {Katayama} when producing the splittable bicomponent short-fiber fabrics that are needle-punched and later hydroentangled before being made into artificial leather {Mimura}. The motivation would be to alter the properties of the fibers and fabrics according to the properties of the additives ({Katayama} C6:L44-60). Therefore, it would have been obvious to combine Mimura and Katayama and obtain the invention as specified.

***Conclusion***

Any inquiry concerning this communication from the Examiner should be directed to SHAWN R. HUTCHINSON whose telephone number is (571)270-1546. The Examiner can normally be reached on 7 AM to 5 PM, M-H.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application is assigned is (571) 273-8300.

/Shawn R. Hutchinson/  
Examiner, Art Unit 1794

/Carol Chaney/  
Supervisory Patent Examiner, Art Unit 1794